UNITED STATES PATENT OFFICE.

JONATHAN O. FOWLER, JR., OF HUDSON, WISCONSIN.

IMPROVEMENT IN FUSES FOR FIRE-ALARMS.

Specification forming part of Letters Patent No. 172,411, dated January 18, 1876; application filed October 20, 1875.

To all whom it may concern:

Be it known that I, JONATHAN O. FOWLER, Jr., of Hudson, in the county of St. Croix and State of Wisconsin, have invented a certain new and Improved Fuse, ignitible by hot air, of which the following is a specification:

The object of my invention is to produce, for use in fire-alarms and similar purposes, a fuse which will remain unchanged by time, and always ignite with certainty when the surrounding atmosphere reaches the temperature fixed upon in the first instance; and to this end it consists in a fuse ignitible by hot air, coated with a varnish or coating impervious to air and moisture, but melting at a temperature as low or lower than that fixed upon for ignition, so that it will not interfere therewith.

My invention is intended mainly as an improvement on the fuse employed in the fire-alarm for which reissued Letters Patent were granted to me as the assignee of J. R. Tunnicliffe, on the 12th day of September, 1871, and is intended to overcome the evils and objections incident to said Tunnicliffe's fuse, as developed in the practical use of the same.

Having been for several years extensively engaged in the manufacture, sale, and introduction of the Tunnicliffe alarms, I have found that, although they answer when new every requirement, they soon become inoperative, owing to the action of the air and moisture on the fuse, cause a rapid oxidation and a consequent failure to ignite at the temperature originally fixed upon. After numerous experiments in changing the fuse and protecting it in various ways, I have found that by giving it a complete coating of a varnish which is impervious to air and water, and which at the same time melts at a temperature as low or lower than that fixed upon for ignition, I can overcome all difficulty, and render the fuse delicate, sensitive, and perfect in its action for an unlimited period of time.

For ordinary purposes the fuses are prepared to ignite at a temperature of from 120° to 160° Fahrenheit, in the manner stated in the patent above referred to, and then coated completely with a varnish composed of equal parts of spermaceti and ether, or of equal parts of Dammar varnish and turpentine, one or more coats being applied and permitted to harden, so as to form a complete air and water tight envelope inclosing the fuse. The envelope or coating being impervious to both water and air, as well as to most acids, protects and preserves the fuse perfectly, completely preventing oxidation, and insuring its ignition at the temperature originally fixed upon.

When the fuse is to be ignited at a temperature higher than that above mentioned I add to the varnish wax, rosin, or sulphur, according to the temperature at which the ignition occurs, to prevent the coating from melting until the temperature is near the limit fixed upon. The temperatures at which the wax, rosin, and sulphur melt being, respectively, 155°, 226°, and 280° Fahrenheit, they are to be used of course only in the coating of fuses which are to ignite at an equal or a higher temperature. In every case the fuse must be readily ignitible by hot air, and the coating must be adapted to melt at an equal or a lower temperature, and must also be impervious both to air and water.

The coating may be varied in its composition, but for ordinary purposes I employ the compounds stated above.

I am aware that fuses ignitible by hot air are not original with me, and also that varnishes of various kinds have been applied to various articles, and I therefore lay no claim thereto, nor broadly to the idea of varnishing a fuse; but

What I do claim is—

A fuse ignitible by hot air, coated and enveloped with a varnish impervious to air and water, which melts at a temperature as low or lower than that at which the fuse ignites, as and for the purpose herein described.

JONATHAN O. FOWLER, JR.

Witnesses:

L. H. FOWLER,

HARRY EICKE.